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Schlinge aus fadenförmigem Werkstoff

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### Loop from threadlike material

The invention concerns a loop ausfadenförmigem work material to the Ligieren of grown or of parts of the body or to the Anschlingen of foreign bodies in body cavities, which exhibits some knot definable to the safety device of the loop against reincreasing in pulling on at least an end of the threadlike material make smallerable and, whereby the free ends the loop education threadlike work of material preferably by a Hypomochlion, in particular in form of a Hohlsonde; are led.

To avoid in modern medicine will tried, operational interferences with more or less expanded surgical opening body and its hollow organs always then, if body cavities, in which interferences are to be made, can be achieved by endoscopes and surgical seized with these devices technically and medically accomplishing cash to appear. Such cavities are beside that e.g. rise up.

the intestine, which entire abdominal cavity, which bearing organs of the woman, who bladder, which nose and throat area, which esophagus, which Eronchien etc. are accessible, thus at all all cavities to a "Skopie". on is nowadays quite in the situation, in such organs plants present, e.g. Polyps (broadly basige or gestielte) @ Zysten, Papillome, to thus generally remove Gewebsbündel. With such interferences, which take place via endoscopes and are observed, the attachment of the ligatures necessary for the avoidance of bleedings is problematic. So far is tried to satisfy bleedings by means of diathermy stream coagulation. It comes frequently to necroses (Gewebstod) and ulcer formation, if necessary to the perforation of the organ wall.

Loops of the kind initially specified e.g. are. described in AT-PS 137,436. These loops from threadlike material can be made smaller by pulling to end of the threadlike material. These loops can be introduced easily by the operating channel or one of the operating channels by endoscopes into body cavities, whereby tubes, spiral hollow probes made of metal, those if necessary. with plastic are coated, the loops as Hypomochlion serve, if it around the too comprehensive Gewebsbündel and/or.

its trunk or the foreign body in position to be brought and tightened. Further manipulations for the mounting of a ligature are not necessary any longer. It is sufficient that the supernatant ends of the threadlike material are cut off with the help of shears introduced by the probe. Subsequently, the Gewebsteil which can be removed can on arbitrary blanks UN way, if necessary. with a steel loop under coagulating with diathermy stream separated and after recent Anschlingung from the organism removes and if necessary. microscopically to be examined, or the Gewebsteil e.g. remains. in mA towards Darmtrakt, purges to the Gewebstod for lack of blood circulation and by vias naturalis is discharged.

The mentioned loops can divide also to the Ligieren of body, e.g. the falling pus, to be used, which with the enlos conical accomplished sterility operation with Mrs. emergency whom dia.

to be can, before splits again the Eileiter and are ligiert. Likewise the ligatures can with actually inoperable do moren to be used, if it concerns to make at least temporarily again passable in the Simme of a Palliativoperation only the lumen of a Ttohlorgane. Unfavorably with from AT-PS 137,436 well-known loop is circumstance that the end of the threadlike material, which the turns Lil aet, outside of which turns against the loop opening back is led by the turns is only then drawn and scarcely below the knot cut off. No more is assigned to this thread portion lei function and it can with the protection of the loop against reincreasing no more

assistance be with the practical application of the bolting knot. Due to the special configuration of the bolting knot it is also only when using particularly thread material developed for it which for sufficient Peibung:: ensures, applicably. in the example when using very body-friendly Catgut of which with contact with body juices very slippery, is the firmness of the bolting knot specified under AT-PS 137,436 perhaps any longer not ensured. There with this Bolting knot the Schlingenveienerung and knot-strengthen keit exclusively by pulling on a end of thread attainable is, must this end of thread maximally under course be set, whereby it is possible that the Gewebsbündel is smoothly cut by the loop, before sufficient Knotenfestigkeit ge would be last-performed. With thread tear the bolting knot would be no longer definable and could withdraw itself the Gewebsbündel from the endoscopic, craving to left, lickfeld the operating surgeon.

The invention is the basis the task to indicate a loop of the kind initially specified which does not divide the mentioned post possesses and after the reduction reliably against reincreasing secured can become.

According to invention this task is solved by the fact that in actually well-known fertilize wise end the loop of forming threadlike material also Vienna prominent to the loop around the other end and is wrapped a thread portion of the end and that this end is likewise led by the turns.

Because the turns screen end end fertilize that by Vienna are led, can rest according to invention the knot planned with the loop fully against the Hypomochlion, which of

Meaning is, since the loop according to invention by pulling on the end not forming the turns reduced smaller and through iehen at the other one, which increases turns forming end approximately again become secured can. This protection effected there through that when pulling to the turns forming end tEnotenfaden ") the highest, finallateral or also several turns into the following turns to be pulled in and the ends led by the turns wedge. One showed wan here as in RK HP of 137,436, to partial end lying outside of the turns to tighten, then the knot would deform and the desired wedging effect by the highest turn cannot occur due to the special knot configuration. Further advantages are to be seen in the fact that the loop can be made of any thread material and the bolting knot is so arranged that it exhibits a completely regular and along arranged form and also at the place of the handling maintains these at any time. Besides the thread portions, which form the loop, are led out parallel from that closely together lieevenw the turns and exhibit therefore no independent twisting tendency or asymmetry of the loop.

Because run within the turns three instead of two thread parts, which are around each other tordiert a increased friction resistance caused, what leads with the knot conclusion to a better pinching. With operations in the abdomen, with which frequently two endoscopes are introduced at the same time, it is to be shifted to Anschlingung of the Gewebsbündels possible, the same in practically each desired direction, by on the appropriate end of thread one pulls alternatively.

Favourable characteristics and arrangements of the invention are characterized in the Unteransprüchen and in the following description.

The invention is more near described in the following on the basis the examples shown in the design.

It shows: Fig. loop, Fig would in accordance with-eat 1 the front end of an endoscope with an invention. 2 the loop, led by a Hohlsonde serving as Hypomochlion, Fig. 3 the loop in increased yardstick, Fig. 4 a preferential execution form of the loop according to invention, Fig. ä) a plan view of the loop according to invention, which is supported by a supporting handle, whereby the bolting knot is supported laterally by a case surrounded and on a flat platform, Fig. 5b) the bolting knot, which is supported on a flat conically course-sharpened platform, surrounded by a case, Fig. 5 C) and Fig is supported for the bolting knot surrounded by a case, that on an easily trichterförmig trained platform. 5 D) a preferential execution form of the opening of the platform, Fig. 6 a side view of the loop supported by a supporting handle, Fig. 7 a side view by a supporting handle supported of the loop, at that laterally an additional steel loop presented and Fig is. 8 a plan view on the head of the Hohlsonde in accordance with Fig. 7.

Fig. 1 shows the front end of a fiber endoscope 1, how it is usually used at present in the medicine. Such endoscopes 1 possess for example an optics 2, to two sources of light a 3 and to two operating channels 4.

For the controlling of the movements of the endoscope, guessed/advised acre other end of the endoscope arranged are for example along dessin outer circumference steel thread not shown let in Device alternatively strained and/or. to be loosened can, so that the front end aligns itself accordingly. The optics 2 as well as the sources of light 3 can be trained for example as usual fiber optics.

As from Fig. 1 to infer is, is imported in one of the operating channels 4 a loop according to invention 6. It understands itself that the loop is usable 6 also in tubularly trained rigid endoscopes of older design.

As in Fig. 2 represented, the loop 6 a knot 7 possesses for fixing the size of the loop 6 and is taken up in a Hypomochlion 8, that for example as tube with 2 mm or several mm of outside diameters, how they are used for example for Herzkatheder, is trained. By the channel of the Hypomochlions 8 the free Enden9, 10 is led the loop 6 and the knot 7 of forming threadlike material. As threadlike material for the loop usual thread material can be used such as CUT property, chrome CUT property, celanese, linen thread or other synthetic thread material in the medicine. In order a certain rigid heat the loop to reach, is favourable it to use an accordingly impregnated thread.

The loop 6 and in Fig. 2 schematically suggested knots 7 for fixing is in Fig. 3 in increased yardstick shown. One recognizes that that-threadlike material is put first to the loop 6 put and one of the free ends 10 in several turns 11, which rise up to the loop 6 around a thread part of U of its as well as around the other end of 9. After the last finalateral turn 12 is formed, that is pulled through the turns 11 screen end end of 1 the turns 11. One receives so a loop 6 and afterwards several turns 11 through the turns 11 is thus both the end of 9 of the threadlike material serving for increasing and making the loop 6 smaller as well as the other end ad as threadlike material h T rdurchgeführt as also the distance piece U is within the turns 11.

If one pulls to the "loop end" on the end 9, then the loop 6 is made smaller and pinches off a Gewebsbündel, for example polyps or such, or a body container or an other part of the body. As soon as the loop 6 lies about stramm around the Gewebsbündel, the lowest turn 13 is pulled in into the next loop, so that a first safety device is given to the loop 6 against reloosening. One can pull here easily on the free end 9 of threadlike mA terials so strongly the fact that this tears off since showed up that the tear place always lies in the range of the lowest turn 13. At the lower end 10 of threadlike mA terials, to which knot-ends, it is pulled on that whereby the highest turn 12 is pulled in into the next lower turn. When pulling on the ends of 9 and 10 supports themselves the turns at the Hypomochlion 8, which in Fig. 3 broken suggested is, off. It is to be still noted that the turns 11 not, as in Fig. 3 for the sake of the better overview shown, in the distance from each other arranged is, but together-close closely. It proved as appropriate, the outermost turns not so stramm to windings like the inside, so that the finalconstant turns 12 and 13 can be more easily pulled in. The end of 10 can be after the highest turn 12 directly by the turns 11 led back or, as into Fig. 3 in broken lines suggested, still around beae ends of the loop 6 put its.

In a favourable kind of manufacture of the bolting knot of the loop according to invention with help of a spiral running at the beginning of formed attaching loop the end of thread 10 in one against-intimate to the external turns around the other end of 9 and the thread part of U one leads around, as in Fig. 4 shown. With spielsweise put with 6 external turns 3 interior turns against-intimate with according to flatter upward gradient around the end of thread 9 and the thread part And. This several times torquerte internal thread bundle is held together tautly by the external turns, which with loops and knot conclusion is later of importance.

Since the loop thread does not run simply straight by the outside turns, as with the other conventional bolt knots, but in the available case in several respects one breaks and one pinches, becomes the friction more largely and those Durability against reopening substantially increases.

The loop according to invention can in combination with one

Supporting handle 14 to be used. This supporting handle 14 is partful in such a way arranged before that it exhibits in driven out condition an oval to circular form and from two equal, closely closed-up Hälfte besteht, whereby it at the outside Extent a groove-similar groove possesses and the together lying surfaces of the two halves is in such a manner wavy out formed that with a side view cavities 15 and closely closed-up place 16 alternate, like this in Fig. 6 represented points. This arrangement participates the pre that at first the gende thread lie in the groove of the retainer has a good stop against lateral slipping out and on the other hand when slow closing the loop 6 the thread in each case in two that at the handle to face each other cavities the 15 engage can. In this way the loop size can be already adjusted either before beginning of the operation to a desired size or one carries out this only at the place of the interference e.g. under endoscopic view, whereby the cavities ensure 15 at the having handle 14 an optimal loop configuration in each case.

With Endoskopiegeräten, which exhibit a sufficient far inside light or the operating channels, exists besides the possibility of combining the supporting handle 14 with presented loop 6 and the supporting handle 14 laterally fitting a steel loop 17. With practical application first loop and knots are closed at the Gewebsbündel, with which one obtains the desired ligature effect, in order to avoid bleedings. After this procedure the supporting handle 14 put around the Gewebsbündel will remain on the spot and can serve in the consequence as a kind teachings, if the steel loop 17 is closed now and the Gewebsbündel is hot cut either coldly or with diathermy stream. oiese Procedure way has the advantage that with the conclusion of the steel loop 17 by unfortunate

coincidence the ligature put before cannot be destroyed. In addition two actually separate processing steps in a course can be settled in this way and through it time be saved. The demolition of the Gewebsbündels in described form brings the advantage with itself that on the one hand a bleeding is prevented and on the other hand the separated Gewebsbündel for histological investigation for order stands. The beschriebene of steel bolts 17 can for example of spring steel, spring steel wire or also from plastic or combinations the same be made.

, A platform 18 exhibits the bolting knot as Hypomochlion serving the Eohlsonde, for example a tube or conventional spiral hollow probes from Iretall at its front end, which can be drawn in either flat, easily trichterförmig or be intensified flat kegeliörmig.

The opening of 19 these the knot conclusion serving platform 18 is preferably oblong oval out-arranged, because thereby the two occurring threads in their parallel storage are held and more uner twist wishes the knot and the loop around the longitudinal axis is refused.

The head of the Hohisonde can be for example so arranged, aass the knots 7 mounting on the platform 18, at least however the lower part of its external turns by a case 20 is surrounded, which fesverhnden with the platform are and lateral slipping of the knot as well as lateral way tilt make impossible. The internal recess of this supporting case 20 is to be arranged conical, so that the knot cannot get stuck under any circumstances therein.



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### PATENTASPRÜCHE loop from threadlike t-erkstoff to the Ligieren of

Plants or of parts of the body or to the Anschlingen of Freirdkörpeln in body cavities, this by pulling on it zuiqindest an end of the threadlike material is make smallerable and a knot definable to the safety device of the loop against reincreasing exhibits, where with the free ends the loop forming thread of förmigen material by a Hypomochlion, in particular in form of a Hohlsonde are led preferably, by the fact characterized that into actually well-known W prices one

End (10) the loop (6) of the forming threadlike

Material also to the loop prominent turns (11), is wrapped 12, 13) around the other end (9) and the thread part (U) of the other end (10) and that this end (10) even likewise by the turns (11, 12, 13) ge leads is.

2. Loop according to requirement 1, by the fact characterized that the end (10), the other end (9) and the thread part (U) within the turns (11, 12, 13) in one against-intimately to the turns (11, 12, 13) bundled led running spiral are.

3. Loop according to requirement 1 or 2, by it characterized that the middle turns (11) are more strirmer wound than the final lateral turns (12 13).

4. Loop after one of the requirements 1 to 3, by the fact characterized that the loop (6) is rigidable by impregnation of the thread material.

5. Loop after one of the requirements 1 to 4, by it, is marked supported daf it by a supporting handle (14), that in the driven out condition an oval to circular form exhibits and from two equal, EN closed-up halves exists, to, other Ur, - catch a groove-similar groove possesses and the closed-up surfaces of the two halves is in such a manner wavy trained that with a Seitenan view of cavities (15) and closely aneinanderliegenue places (16) alternate (S. Fig. 6).

6. Loop according to requirement 5; by the fact characterized that that Supporting handle (10) laterally a steel loop (17) fits.

7. Loop after one of the requirements 1 to 6, through gekenn draws that the bolting knot (7) at the front end the Hohlsonde on a flat form (18), serving as Hypomochlion, is supported, which forms flat or easily funnels förmig drawn in or @flach conically intensified ausge is.

8. Loop according to requirement 7, by the fact characterized that the opening (19) of the platform (18) is oblong oval trained.

9. Loop according to requirement 7 or 8, by the fact characterized that on the platform (18) mounting bolting knots (7) by a case (20) it is surrounded, which is firmly connected with the platform (18).

10. Loop according to requirement 9, by the fact characterized that only the lower part Aussenwindungendes of bolting knot (7) is surrounded by the case (20).

11. Loop according to requirement 9 or 10, by the fact characterized that the inside light of the case (20) is conically trained.

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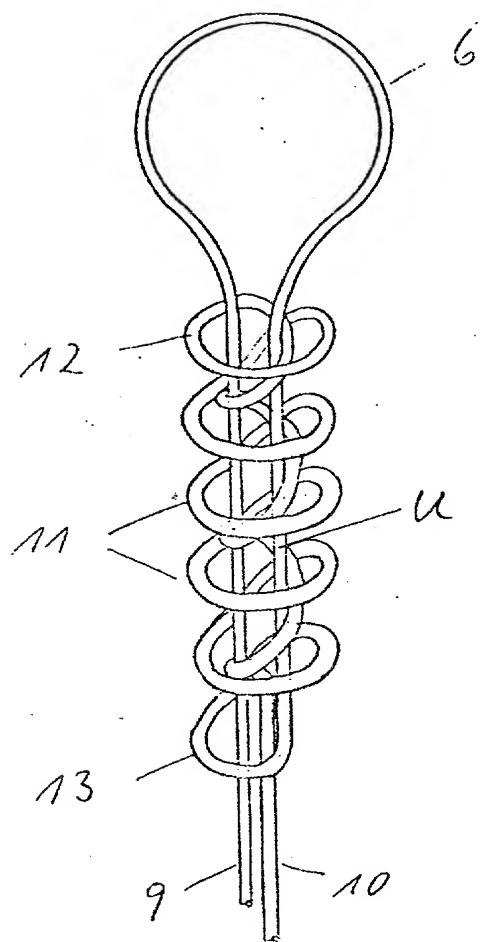


Fig. 4

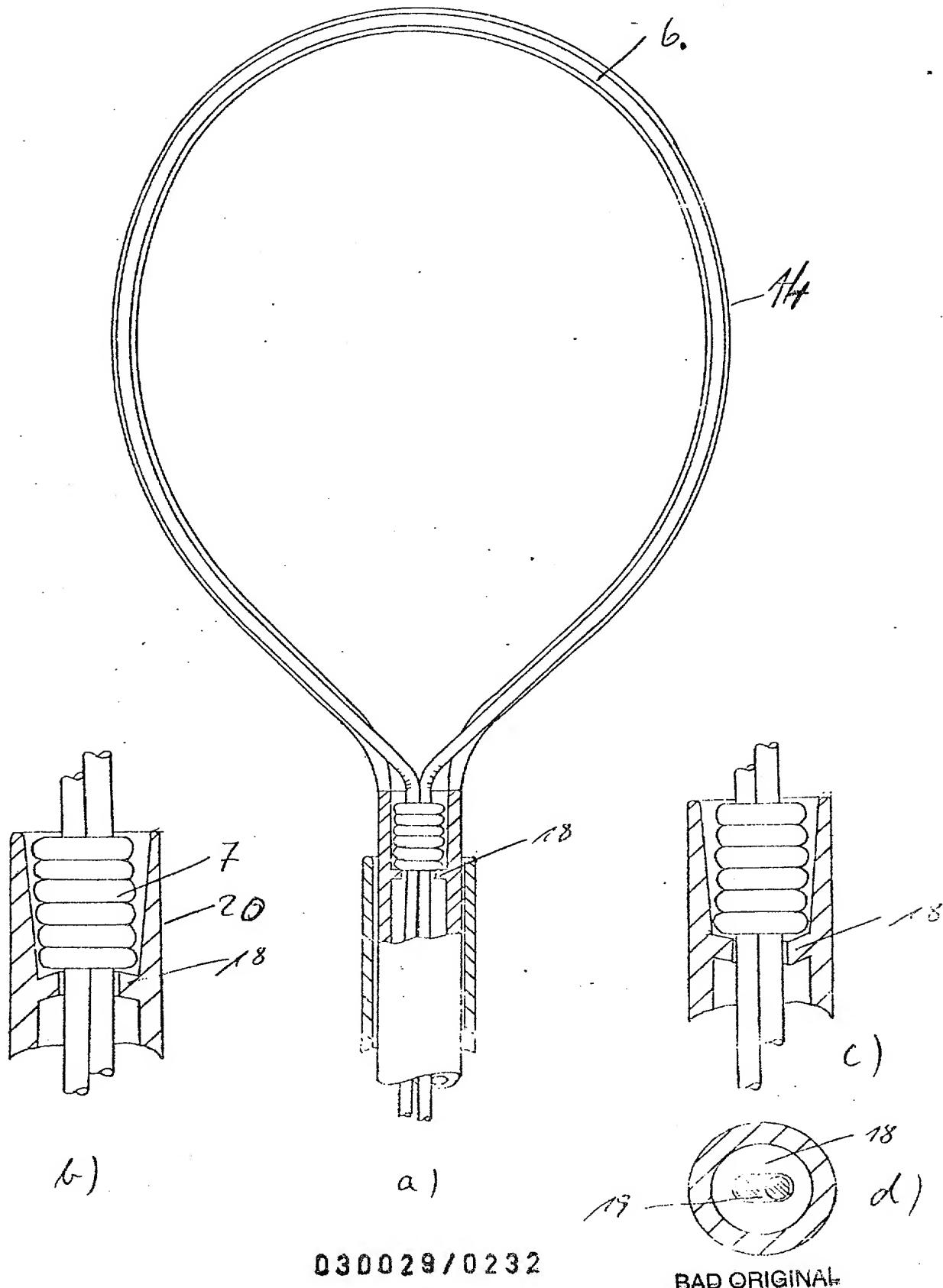
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Fig. 5

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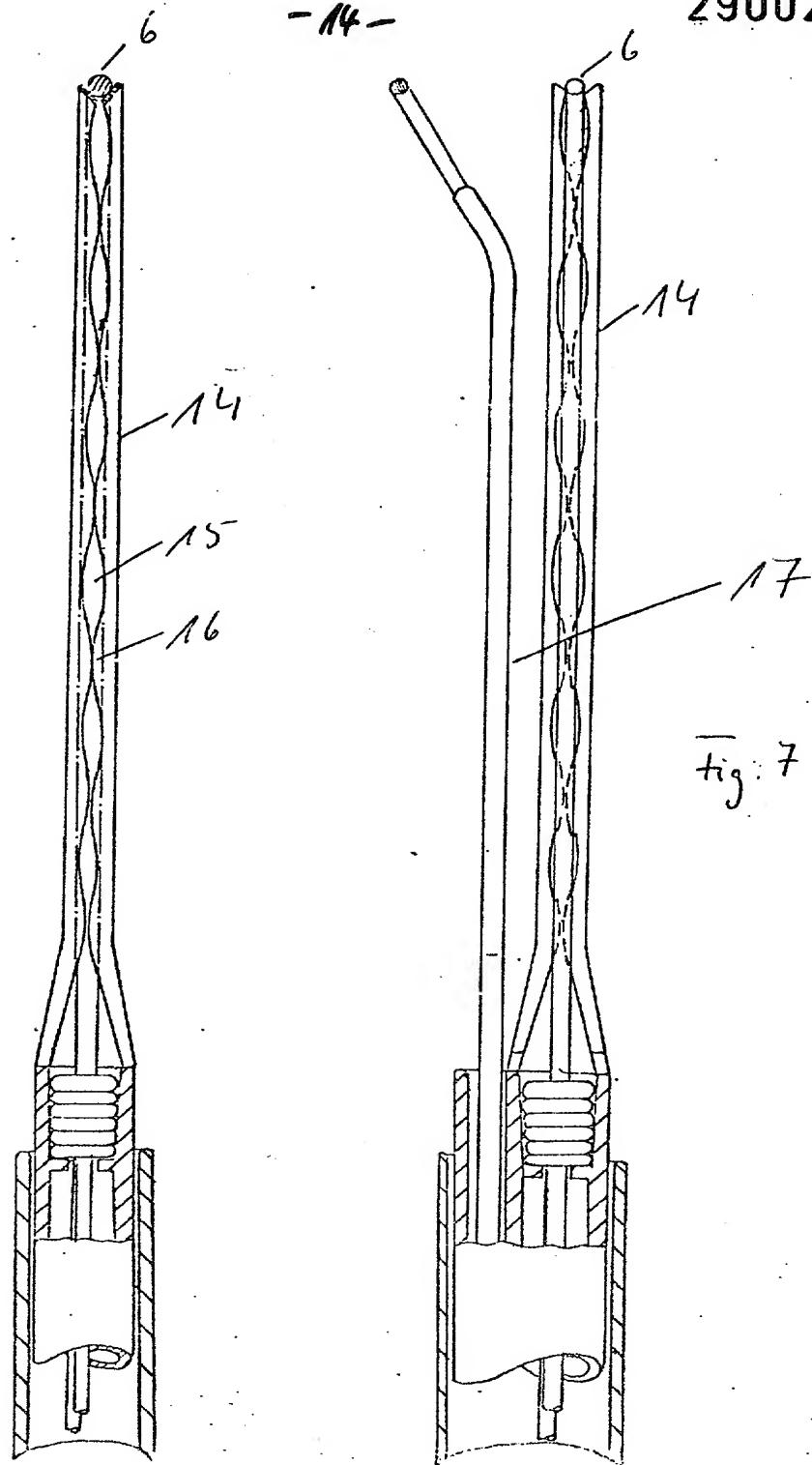


Fig. 6

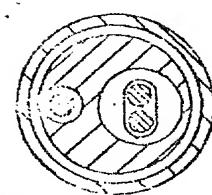


Fig. 8

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FIG. 1

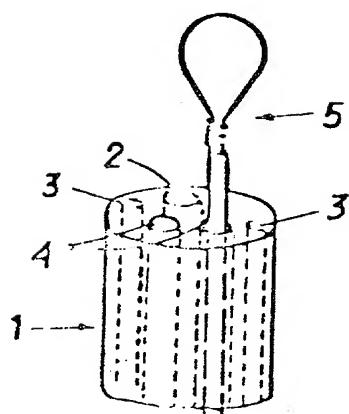


FIG. 3

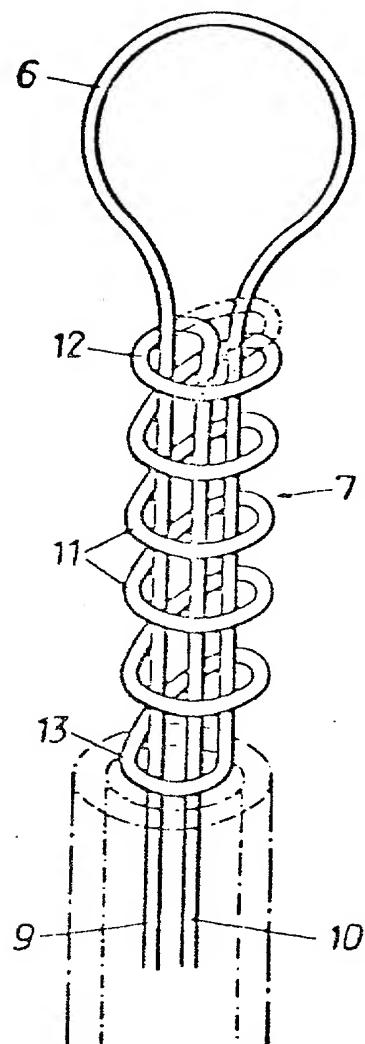


FIG. 2

